

## SUMMARY OF TOTAL MAXIMUM DAILY LOAD FOR FECAL COLIFORM FOR THE LOWER SALINAS RIVER WATERSHED

### PROPOSED SCHEDULE

- Draft Project Report: December 2007
- Central Coast Water Board Hearing: 2008

### BACKGROUND

#### Clean Water Act 303(d) List

The following bodies of water were placed on the Clean Water Act 303(d) list of impaired water bodies. These waters were “listed” due to exceedances of existing water quality standards for fecal coliform.

- Salinas River (Lower) (from Gonzales downstream to the Salinas River Lagoon)
- Old Salinas River Estuary
- Tembladero Slough
- Salinas Reclamation Canal
- Gabilan Creek
- Alisal Creek

#### Beneficial Uses

Water quality objectives are in place to protect beneficial uses of the surface waters. In the case of the Salinas River Fecal Coliform TMDL (Project), water contact recreation is the most sensitive beneficial use to elevated fecal coliform levels.

Shellfish harvesting is a designated beneficial use of the Salinas River Lagoon, the Salinas River Estuary, and Tembladero Slough. Central Coast Water Board staff (staff) proposes to remove the shellfish harvesting beneficial use from these bodies of water. The explanation for removal of the shellfish harvesting beneficial use is provided in Appendix-A (Summary of Use Attainability Analysis) of this document.

The shellfish harvesting beneficial use has an associated water quality objective for total coliform; the total coliform objective protecting shellfish harvesting is a stricter standard than the objective protecting water contact recreation. However, since staff is proposing the removal of the shellfish harvesting beneficial use, the stricter standard will not apply if the beneficial use is removed.

#### Water Quality Standards and Indicators

Fecal coliform and *Escherichia coli* (*E. coli*) are used as indicator organisms for the presence of pathogenic organisms. Fecal coliform and *E. coli* are together referred to as indicator organisms in this summary document.

The Water Quality Control Plan of the Central Coast Region (Basin Plan) describes the following numeric water quality objectives to protect water contact recreation:

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*Fecal coliform concentration , based on a minimum of not less than five samples for any 30-day period, shall not exceed a log mean of 200/100mL, nor shall more than ten percent of total samples during any 30-day period exceed 400/100mL.*

The State Water Resources Control Board is currently developing a proposal for new water quality objectives using generic *E. coli*. The proposed *E. coli* objectives are to be applied statewide and reflect USEPA recommended criteria for the protection of water contact recreation. Several Regional Water Quality Control Boards in the state have already adopted the USEPA recommended criteria for *E. coli*.

The proposed *E. coli* objective includes a geometric mean essentially stating:

*The geometric mean density of E. coli shall not exceed 126 MPN/100mL.*

To analyze data, staff grouped *E. coli* data into the following seasons for the geometric mean calculation:

- Wet weather: 1November through 30April
- Dry weather: 1May through 31October

### **SUMMARY DATA**

Data sources include:

- Central Coast Ambient Monitoring Program (CCAMP)
- United States Department of Agriculture (USDA)
- Facilities regulated by the Central Coast Water Board
- Staff monitoring activities
- Land Use information
- Genetic data and information

The available data includes concentration data of fecal coliform, *E. coli*, and presence/absence data of the *E. coli* strain O157:H7. Additionally, USDA conducted some genotyping analysis of *E. coli* O157:H7 and staff considered results of genetic analyses from a nearby watershed. These datasets were used to assess impairment and sources of indicator bacteria of the waterbodies in the project area.

### **Project Area**

Figure 1 illustrates some of the surface waterbodies in the project area; these waterbodies will be referred to in this document.

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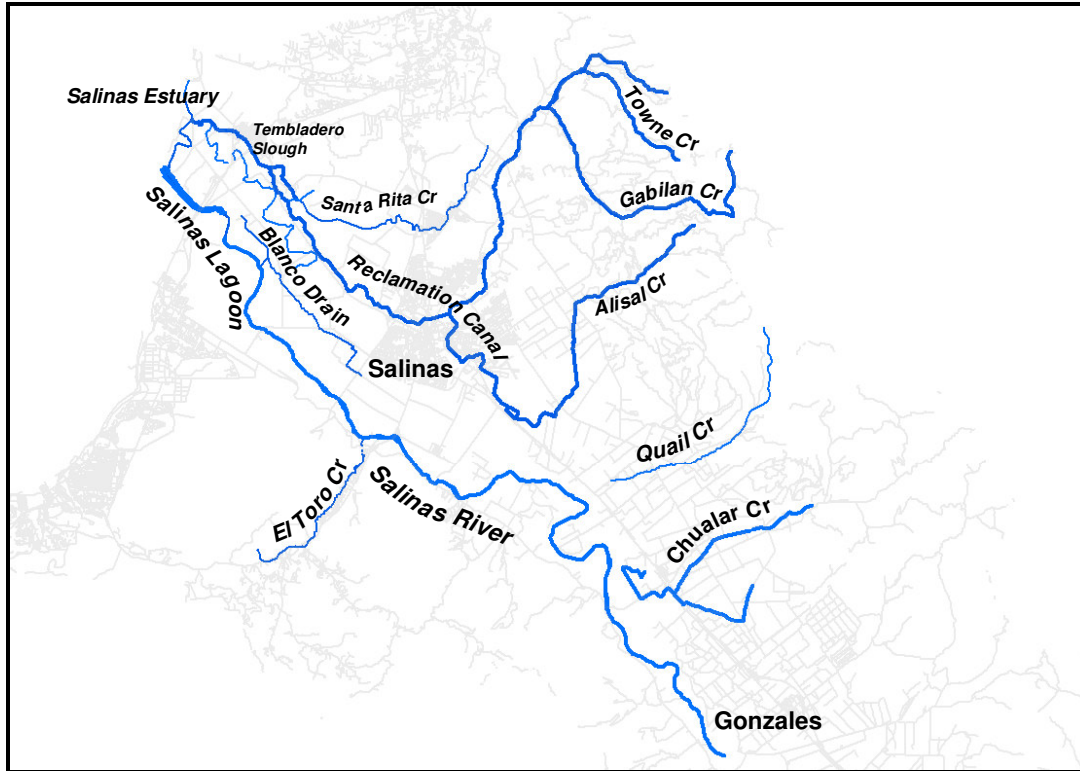


Figure 1 Surface Waterbodies in Project Area

### Impaired Waters

Table 1 is a summary of the impairment and exceedance of water quality objectives. Note that all the waterbodies currently listed on the 303(d) list are confirmed to be exceeding water quality objectives. In addition, Santa Rita Creek, Quail Creek, Chualar Creek and Towne Creek are not meeting water quality objectives, and are *not* currently listed on the 303(d) list of impaired waterbodies; TMDLs will also be developed for these waterbodies.

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**Table 1 Summary of impairment.**

| Waterbody                 | Exceeding a water quality objective or recommended level? | Water quality objective or recommended level exceeded? |                                 | Currently listed on 303(d) list? |
|---------------------------|-----------------------------------------------------------|--------------------------------------------------------|---------------------------------|----------------------------------|
|                           |                                                           | Fecal Coliform Objective                               | USEPA recommended E. coli level |                                  |
| Lower Salinas River       | Yes                                                       | YES                                                    |                                 | Yes                              |
| Salinas River Lagoon      | Yes                                                       | YES                                                    | YES                             | No                               |
| Old Salinas River Estuary | Yes                                                       | YES                                                    | YES                             | Yes                              |
| Tembladero Slough         | Yes                                                       | YES                                                    | YES                             | Yes                              |
| Salinas Rec. Canal        | Yes                                                       |                                                        | YES                             | Yes                              |
| Alisal Creek              | Yes                                                       | YES                                                    | YES                             | Yes                              |
| Gabilan Creek             | Yes                                                       | YES                                                    | YES                             | Yes                              |
| Blanco Drain              | No                                                        |                                                        |                                 | No                               |
| Santa Rita Creek          | Yes                                                       | YES                                                    |                                 | No                               |
| Quail Creek               | Yes                                                       | YES                                                    | YES                             | No                               |
| Chualar Creek             | Yes                                                       | YES                                                    |                                 | No                               |
| El Toro Creek             | No <sup>1</sup>                                           |                                                        |                                 | No                               |
| Towne Creek               | Yes                                                       | YES                                                    | YES                             | No                               |

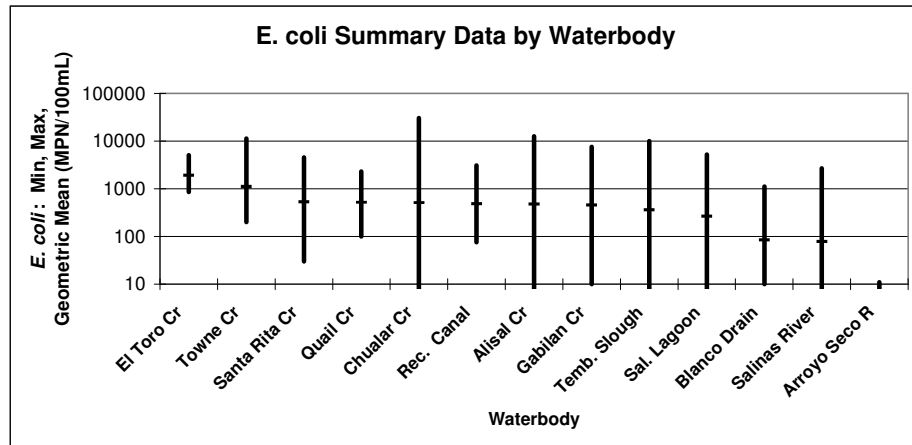
<sup>1</sup>Insufficient data to determine.

### Summary Data

Figure 2 illustrates summary data for each of the waterbodies in Table 1. The summary data and corresponding graph show the minimum, maximum, geometric mean, and number of data for each waterbody. Note that the data in Figure 2 is summary data only and is not meant to be compared with water quality objectives; the data is presented to give the reader a sense of relative concentrations of indicator bacteria in the project area.

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Salinas River Fecal Coliform and Tributaries TMDL

| Waterbody      | El Toro Cr | Towne Cr     | Santa Rita Cr | Quail Cr     | Chualar Cr    | Rec. Canal    | Alisal Cr |
|----------------|------------|--------------|---------------|--------------|---------------|---------------|-----------|
| Maximum        | 5040       | 11370        | 4570          | 2300         | 30440         | 3090          | 12590     |
| Minimum        | 860        | 201          | 30            | 100          | 5             | 76            | 2         |
| Geometric Mean | 1911       | 1104         | 526           | 520          | 510           | 480           | 477       |
| No. of data    | 3          | 39           | 19            | 10           | 7             | 12            | 32        |
| Waterbody      | Gabilan Cr | Temb. Slough | Sal. Lagoon   | Blanco Drain | Salinas River | Arroyo Seco R |           |
| Maximum        | 7590       | 10000        | 5200          | 1120         | 2700          | 11            |           |
| Minimum        | 10         | 3            | 1             | 10           | 1             | 5             |           |
| Geometric Mean | 454        | 360          | 264           | 83           | 78            | 7             |           |
| No. of data    | 100        | 78           | 72            | 19           | 104           | 4             |           |



- The horizontal bar on each vertical bar is the geometric mean

**Figure 2 Summary data by waterbody**

Figure 3 geographically illustrates the number of samples that were positive for the presence of *E. coli* O157:H7.

Note from Figure 3 that several waterbodies have monitoring sites where *E. coli* O157:H7 has been identified, including:

- The Salinas River Estuary
- The Salinas River Lagoon
- The Salinas River
- Tembladero Slough
- Salinas Reclamation Canal
- Gabilan Creek
- Towne Creek
- Chualar Creek

Also note that more samples tested positive for *E. coli* O157:H7 in the Gabilan Creek watershed than other subwatersheds in the project area.

Genetic analysis was performed on the samples positive for *E. coli* O157:H7; results of this analysis is discussed in the Preliminary Source Analysis section below.

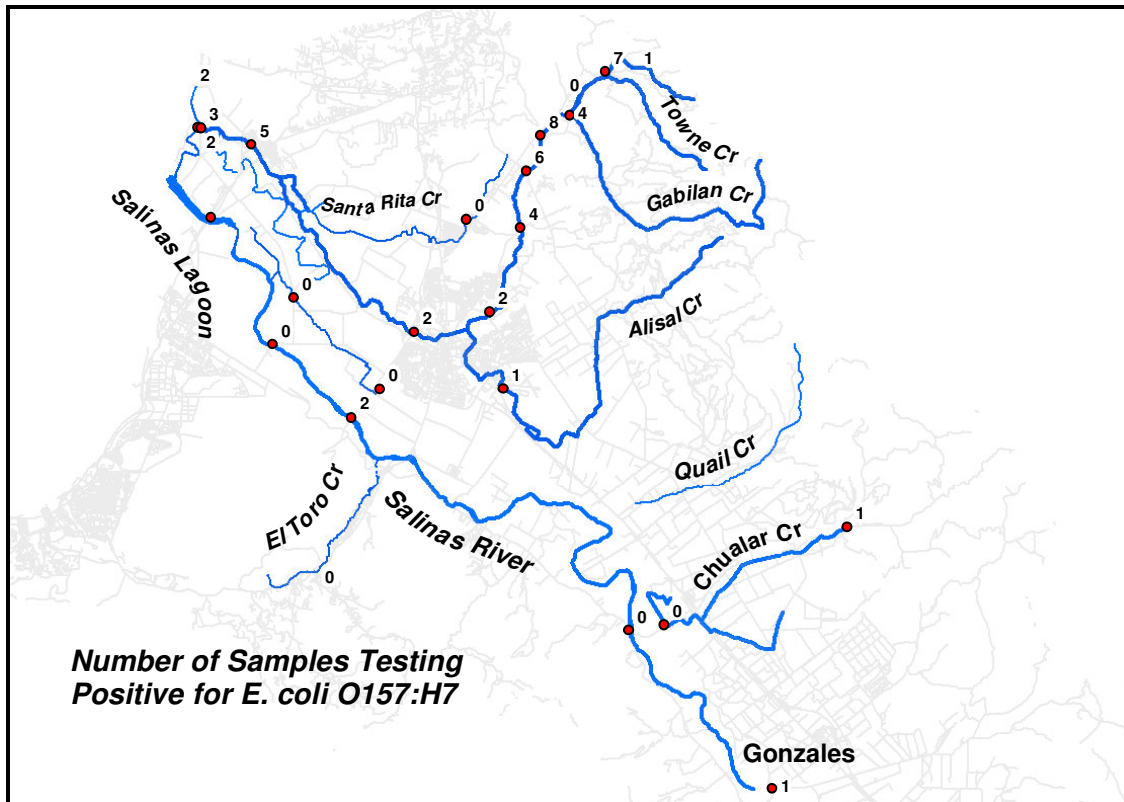


Figure 3 Sum of samples positive for *E. coli* O157:H7 at monitoring sites.

### Seasonality

Maximum *E. coli* concentration and the incidence of positive identification of *E. coli* O157:H7 was higher during the rainy season, relative to the dry season. In addition, median concentration of indicator bacteria was higher during wet months, relative to dry months. Figure 4 illustrates dry and wet season maximum *E. coli* concentrations at monitoring sites in the project area. Note that for most monitoring sites, the wet season maximum *E. coli* concentration was greater than the dry maximum. This phenomenon may be evidence that indicator organisms are swept from terrestrial areas during rain events, resulting in higher concentrations. In addition, indicator organisms adsorbed to sediment particles may have been entrained in the water column during high flows following and/or during rain events.

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Salinas River Fecal Coliform and Tributaries TMDL

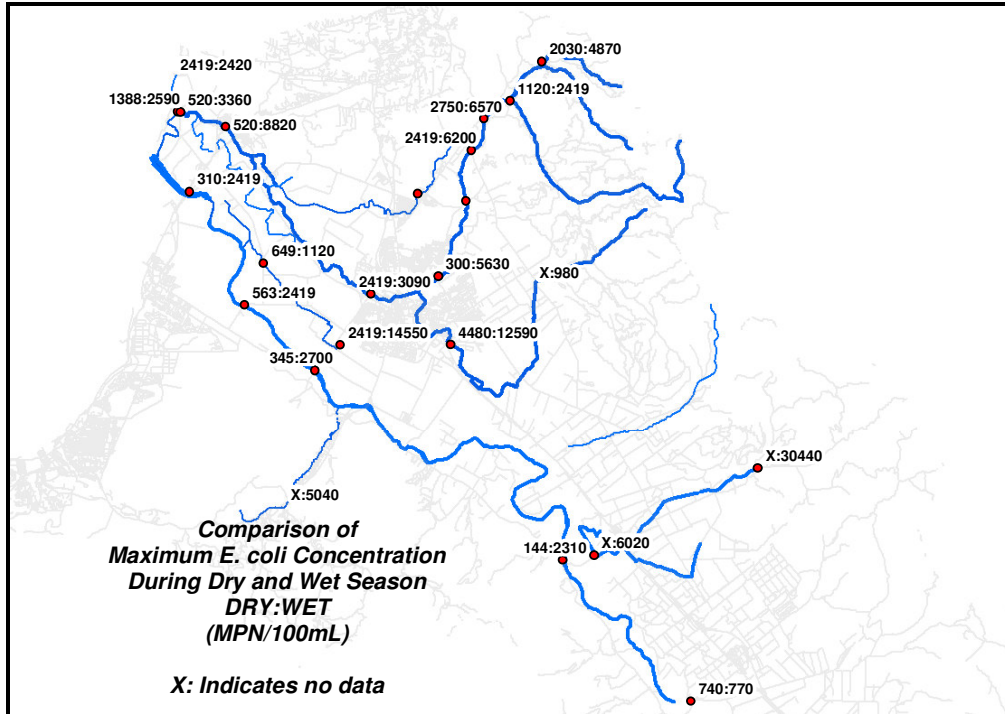


Figure 4 Dry and wet season maximum *E. coli* concentrations

### Land Use

Land use areas in the watershed, in this summary document, are categorized into:

- 1) rural
- 2) urbanized and
- 3) crop production.

These three land use categories make up over 90% of the lands in the project area, with crop production lands contributing the greatest area.

Rural lands in the Project area include wooded areas and grasslands. These areas typically have single family homes, many with outbuildings, e.g. barns. Staff routinely observed livestock grazing in many of the grasslands, e.g. in the upper Gabilan watershed. The wooded areas are generally located upslope of the grassland areas and carry little development. Wild animals, e.g. deer, opossum, skunk, deer, turkeys, were observed by staff in and near wooded areas. Wild pigs are reported to be present in some areas as well.

The urbanized areas contain housing, commercial, industrial, transportation, and similar development. These areas typically attract different animal species, relative to rural areas. In addition, groundwater infiltration and overland water flow has been modified from natural conditions due to the increase of impervious surfaces. Consequently, the potential transport of pollutants through overland flow and stormwater is increased, relative to rural areas.

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Crop production lands in the Project area typically include areas of several acres engaging in irrigated agriculture. Crop production in the Project area is dominated by inorganic farming, using groundwater, and in some areas, recycled water. Crop lands in the Project area are typically located along surface waters, and are downstream of rural areas.

### **Preliminary Data Analysis Summary**

- All 303(d) listed waterbodies in the project area exceeded water quality objectives for indicator bacteria.
- Some waterbodies not currently listed also exceeded water quality objectives or USEPA recommended levels for indicator bacteria.
- The disease-causing strain of *E. coli* O157:H7 was isolated from samples drawn from several monitoring sites in the project area.
- *E. coli* O157:H7 was isolated more often from samples drawn in areas where livestock had access to surface waters, particularly in the Gabilan Creek watershed.
- Maximum *E. coli* concentrations occurred predominantly during wet season months.
- There was a trend of higher median indicator bacteria concentration during winter months.
- Water quality objectives and USEPA recommended levels for indicator bacteria were exceeded in all land use categories, including rural areas upstream of urban and agricultural lands.
- Evidence suggests that the elevated concentrations in agricultural areas are the result of indicator bacteria loading from upstream waters.

## **PRELIMINARY SOURCE ANALYSIS**

### **Background (Natural) Sources of Indicator Bacteria**

Numerous wild animals are present in the project area; all are potential sources of indicator bacteria to surface waters. The animals that are likely contributors include wild pigs, skunk, opossum, raccoon, deer, birds (including wild fowl), rodents, etc.

DNA analysis of fecal coliform and *E. coli* was performed on samples drawn from surface waters in the San Lorenzo River and Watsonville Slough watersheds. A significant proportion of the *E. coli* identified in these analyses originated from bird species. Although these results cannot directly be applied to the Salinas watershed, the results do give insight into the potential contributions from wildlife in the project area. It should be noted that these data were derived from samples drawn in the lower reaches of the watershed and not headwater areas; lower areas in the watershed tend to attract many birds.

### **Livestock**

Many areas in the upper subwatersheds support grazing lands and livestock facilities. Livestock have access to surface waters in some portions of the project area. Staff observed cattle in surface waters and along creek banks of the Gabilan subwatershed.



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Gabilan creek flowed throughout the years of 2005 and 2006, and exceedance of water quality objectives for indicator bacteria was common. *E. coli* O157:H7 was more prevalent in samples adjacent to areas where livestock had access to surface waters.

Cattle are known carriers of *E. coli* O157:H7, several samples drawn from the Gabilan Creek watershed were positive for this strain of *E. coli*. MLVA analysis is a form of genetic typing of *E. coli*. The MLVA type of *E. coli* O157:H7 isolated from cattle feces collected in the Gabilan Creek watershed matched the MLVA type of *E. coli* O157:H7 isolated from a water sample drawn from Gabilan Creek.

In addition to large tracts of lands supporting grazing and livestock operations, some smaller parcels of land with single-family homes are used to raise farm animals, likely for personal use. The Monterey County Department of Health conducted three creek walks along a two mile reach of Santa Rita Creek. County Health staff noted several incidences of farm animal access and/or animal waste adjacent to Santa Rita Creek, a tributary to Tembladero Slough, from single family homes. Although the number of animals from the single family home operations is not great, the combined affect could have a significant impact on water quality. This information may give insight into a more widespread problem of farm animal sources from “backyard livestock” owners.

### **Sources from Urban Areas**

The Central Coast Water Board has had DNA fingerprinting analysis performed from water samples drawn from urban watersheds (San Lorenzo and Watsonville Slough). Sources of indicator bacteria in urban channels typically include waste from wild animals, pets, and humans.

Staff observed numerous signs of waste from wild animals, pets, and humans along urban channels in the project area. Much of the animal and human waste in urban watersheds will reach urban channels either through overland flow or through stormwater conduits.

Stormwater indicator bacteria levels in the project area were typically in excess of water quality objectives. Staff notes that this is not uncommon, as urban stormwater data from other areas also exceed indicator bacteria standards.

### **Illegal Dumping**

The Monterey County Department of Health has conducted three two mile creek walks along Santa Rita Creek. County Health staff noted and photographed eleven incidences of solid waste dumping along the two-mile reach investigated. Central Coast Water Board staff also encountered dumping sites along and in surface waters in the Watershed. On one occasion, staff observed soiled baby diapers dumped in Gabilan Creek.

Solid waste dumping along surface water areas is prevalent in the Project area. Staff proposes that this is a source of indicator bacteria to Project surface waters.

### **Homeless People**

There is a homeless population in the project area. In some cases, homeless

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encampments have been built along creek systems. Sanitary conditions among the homeless vary widely. In some cases, the encampments are somewhat elaborate, with designated areas for bathroom activities. However, in other cases, surface waters are used for bathroom activities. Estimating the contribution of indicator bacteria from homeless people to surface waters is difficult and likely variable. However, it is probable that the homeless population plays a role in the contribution from human sources.

### **Spills and Leaks from Sewer Systems**

There are several regulated entities treating wastewater in the project area. The collection systems are also regulated.

Regulated dischargers are required to report sewage spills to the Central Coast Water Board. Along with other information, the volume of the spill and whether the spill reached surface waters is reported. Spilled material is typically contained and disinfected as soon as possible.

Staff reviewed spill reports from 2004 to present. Based on the information available at the time of this report, sewage spills and leaks do not appear to be a source in the Project area. However, in an effort to increase assuredness, staff is proposing to increase monitoring of select regulated entities.

### **Onsite Waste Disposal Systems**

Many residents in county areas have onsite septic systems. An unknown proportion of these reside near surface waters.

Monterey County Department of Health regulates the issuance of new permits for septic systems and is responsible for investigating failing systems. However, municipalities typically do not have the resources to investigate existing systems, unless the existing system is suspected of failing, or the property owner has made application for new development. Of particular concern is the Bolsa Knowles area adjacent to the City of Salinas. The Bolsa Knowles area is a 30-50 year old housing tract adjacent to the City of Salinas along Santa Rita Creek. The homes in this area are on individual septic systems. Monterey County Department of Health staff (County staff) did not note any failing septic systems along Santa Rita Creek; the County staff conducting the creek walk had extensive experience inspecting septic systems.

Septic systems do not appear to be a source of indicator bacteria in the Project area.

### **Irrigated Agricultural Lands**

Staff reviewed water quality data and other information in an effort to determine whether irrigated agriculture is a source of indicator bacteria in the Project area. Data and information suggest that irrigated agriculture is not a source of indicator bacteria causing exceedance of water quality objectives.

Growers in the project area are highly aware of food safety issues; their livelihood depends on providing a crop that is safe for consumers. As such, growers practice

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Salinas River Fecal Coliform and Tributaries TMDL

methods that minimize the potential of crop contamination. Staff conducted reconnaissance in the project area for a period of two years, and did not document land or field practices that would result in a controllable discharge of indicator bacteria to surface waters.

Staff is proposing that discharges from irrigated lands in the project area are not causing exceedance of water quality objectives related to indicator bacteria.

**Summary of Preliminary Source Analysis**

Table 2 outlines the source categories and probable source organisms of known or suspected sources of indicator bacteria in the project area.

| Source Category      | Source Organism(s)                                                             |
|----------------------|--------------------------------------------------------------------------------|
| Background (natural) | Examples include: wild pigs, skunk, opossum, birds (including fowl), and deer. |
| Livestock            | Examples include: cattle, horses, goats, sheep, chickens.                      |
| Urban Sources        | Dogs, cats, humans.                                                            |
| Illegal Dumping      | Probable sources: humans and pets.                                             |
| Homeless People      | Humans                                                                         |

**Table 2 Summary of preliminary source analysis; categories and source organisms.**

**PROPOSED NUMERIC TARGETS**

Staff is proposing that the numeric targets for the TMDL be based on both the USEPA recommended concentration for *E. coli* as well as the current Basin Plan objective for fecal coliform.

The proposed generic *E. coli* numeric target is follows:

*The geometric mean density of E. coli shall not exceed 126 MPN/100mL, based on a minimum of not less than five samples collected during any 30-day period.*

The proposed fecal coliform numeric target is as follows:

*Fecal coliform concentration , based on a minimum of not less than five samples for any 30-day period, shall not exceed a log mean of 200/100mL, nor shall more than ten percent of total samples during any 30-day period exceed 400/100mL.*

## TOTAL MAXIMUM DAILY LOAD (TMDL)

Staff is proposing TMDLs for the listed waterbodies, impaired but not listed waterbodies (see Table 1 for list), and the tributaries of listed and impaired but not listed water bodies.

The TMDLs are:

*Discharges may not cause receiving water concentration of E. coli to exceed the following:*

*The geometric mean density of E. coli shall not exceed 126 MPN/100mL, based on a minimum of not less than five samples collected during any 30-day period.*

*Discharges may not cause receiving water concentration of fecal coliform to exceed the following:*

*Fecal coliform concentration , based on a minimum of not less than five samples for any 30-day period, shall not exceed a log mean of 200/100mL, nor shall more than ten percent of total samples during any 30-day period exceed 400/100mL.*

## ALLOCATIONS

Table 3 shows the allocations for each source category and corresponding responsible party. Note that responsible parties are not responsible for uncontrollable sources (background) of indicator bacteria.

**Table 3 Allocations**

| Responsible Party                                                            | Source Category      | Allocation<br>(fecal coliform and E. coli<br>MPN/100mL) |
|------------------------------------------------------------------------------|----------------------|---------------------------------------------------------|
| <i>Controllable Sources</i>                                                  |                      |                                                         |
| Operators or owners of grazing lands, livestock facilities, and farm animals | Livestock            | ▪ Equal to the TMDLs                                    |
| City of Salinas                                                              | Urban Sources        | ▪ Equal to the TMDLs                                    |
| Monterey Regional Group                                                      | Urban Sources        | ▪ Equal to the TMDLs                                    |
| Land owners of illegal dump sites                                            | Illegal dumping      | ▪ Equal to the TMDLs                                    |
| Land owners with homeless encampments                                        | Homeless people      | ▪ Equal to the TMDLs                                    |
| <i>Uncontrollable Sources</i>                                                |                      |                                                         |
| None                                                                         | Natural (Background) | ▪ Equal to the TMDLs                                    |

## **IMPLEMENTATION AND MONITORING**

The authority to require actions to implement and monitor the TMDL will likely be based on existing and proposed regulatory mechanisms. Water Board staff recommends the following actions be developed or modified as part of the TMDL implementation:

1. Owners of grazing lands, livestock facilities, and backyard livestock owners should implement management measures and reporting as part of waste discharge requirements (WDRs), waivers of WDRs, or prohibitions to comply with the states' Nonpoint Source Policy.
2. The City of Salinas and the Monterey Regional Group should specifically target reduction of indicator bacteria in their Storm Water Management Plans.
3. Monterey County Health Department, Division of Environmental Health should continue, and if necessary, enhance, their proactive program to alleviate illegal dumping and report progress to the Water Board.
4. The County of Monterey, the City of Salinas, and private landowners of homeless encampments should identify and implement management measures in an effort to eliminate human waste from entering surface waters.

Monitoring requirements will be described in the regulatory mechanisms regulating each source. Staff anticipates that the following may be required:

- Indicator bacteria monitoring of 303(d) listed water bodies.
  - E.g. from monitoring associated with permits, and/or regulatory mechanisms consistent with the NPS policy.
- Monitoring of management measures aimed at achieving the allocations and TMDL.

Water Board staff will conduct triennial reviews to assess progress towards achieving the TMDL.

## **TIMELINE**

Staff has not yet determined the amount of time necessary to achieve the TMDL.

## **CONTACT INFORMATION**

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# **DRAFT**

## **SUMMARY OF USE ATTAINABILITY ANALYSIS FOR SALINAS RIVER LAGOON SALINAS RIVER ESTUARY TEMBLADERO SLOUGH IN MONTEREY COUNTY, CALIFORNIA**

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## INTRODUCTION

Use classifications, also known as beneficial uses under California law, are “uses specified in water quality standards for each water body or segment whether or not they are being attained” (40 CFR §131.3(f)).

States must protect beneficial uses of water bodies unless the state demonstrates that the use(s) are not attainable. To remove a beneficial use designation, a use attainability analysis (UAA) must be conducted. The UAA must demonstrate that at least one of six factors described in 40CFR131.10(g) are met. The six factors are as follows:

1. Naturally occurring pollutant concentrations prevent the attainment of the use; or
2. Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met; or
3. Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place, or
4. Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use; or
5. Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses, or
6. Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact.

State may NOT remove an existing designated use.

- “Existing uses are those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards.” 40CFR131.3(d)

Therefore, to de-designate a beneficial use from a water body, the state must:

1. Demonstrate that the use has not been an existing use since November 28, 1975.
  - This includes demonstration that the use was not exercised, and
  - Demonstration that water quality did not support the use.
2. Demonstrate that one of the six factors described above apply.

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The Salinas River Lagoon, the Salinas River Estuary, and Tembladero Slough are designated as supporting the shellfish harvesting beneficial use (SHELL). The SHELL beneficial use is defined as:

*Uses of water that support habitats suitable for the collection of filter-feeding shellfish (e.g., clams, oysters, and mussels) for human consumption, commercial or sport purposes. This includes waters that have in the past, or may in the future, contain significant shellfisheries.*

Water Board staff is proposing to remove the SHELL beneficial use from the Salinas River Lagoon, Salinas River Estuary, and Tembladero Slough. The justification for removal of the SHELL beneficial use is described below.

### DESCRIPTION OF WATER BODIES

The Salinas River Lagoon, Salinas River Estuary, and Tembladero Slough are located in the lower Salinas River Watershed, as illustrated in Figure 5.

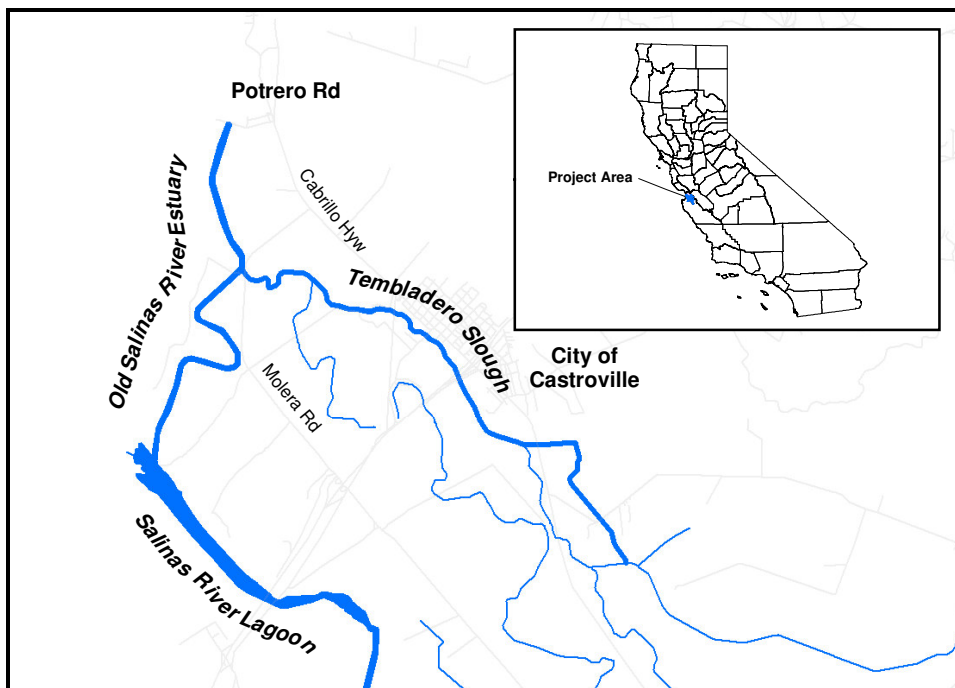


Figure 5 Location of Salinas River Lagoon, Salinas River Estuary, and Tembladero Slough

### METHODOLOGY

Staff used the following steps to determine whether to support the proposal of de-designation of the SHELL beneficial use:

1. Determine whether the designated use has been exercised since November 28,



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Salinas River Fecal Coliform and Tributaries TMDL

1975.

2. Determine whether water quality in the designated water bodies has supported the SHELL beneficial use since 1975.
  - a. If no, consider whether the water quality condition could be compensated by effluent discharges without violating water conservation requirements?
3. Determine what factors preclude attainment of the SHELL beneficial use.
4. Consider whether restoration in the designated water bodies is an option to support the beneficial use.

## DATA AND INFORMATION

### Indicator bacteria water quality objectives to protect the SHELL beneficial use.

The Basin Plan numeric water quality objective for the protection of the SHELL beneficial use is:

*At all areas where shellfish may be harvested for human consumption, the median total coliform concentration throughout the water column for any 30-day period shall not exceed 70/100 mL, nor shall more than 10% of the samples collected during any 30-day period exceed 230/100 mL for a five-tube decimal dilution test or 330/100 mL when a three-tube decimal dilution test is used.*

The Department of Health Services standards for the protection of the shell fishing beneficial use are:

- i. The total coliform median or geometric mean MPN of the water does not exceed 70 per 100 mL and not more than 10 percent of the samples exceed a MPN of 230 per 100 mL for a five-tube decimal dilution test.*
- ii. The fecal coliform median or geometric mean MPN of the water does not exceed 14 per 100 mL and not more than 10 percent of the samples exceed a MPN of 43 for a five-tube decimal dilution test.*

In California, Department of Health Services (DHS) uses the fecal coliform standard most often to classify growing areas (as opposed to total coliform).

Staff chose to use the DHS standards of fecal coliform concentrations for the beneficial use of shell fishing for the UAA analysis because they are the most conservative and are the most protective of the shell fishing beneficial use.

### Is shell fishing an existing beneficial use?

Staff engaged in the following activities to determine whether the shell fishing beneficial use is, or has been, occurring since November 28, 1975:

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- Telephone interviews
- Literature search
- Public postings at access areas requesting information
- Web posting requesting information
- Site monitoring

Based on the information obtained from these activities, staff has no evidence that shell fishing has occurred in the Salinas River Lagoon, Salinas River Estuary, or Tembladero Slough since November 28, 1975.

### **Has water quality supported the shell fishing beneficial use since November 1975?**

Data indicates that indicator bacteria concentrations in the Salinas River Lagoon, Salinas River Estuary, and Tembladero Slough have been in excess of objectives needed to support the shell fishing beneficial use since, or before, November 28, 1975.

### **Could the current water quality condition be mitigated with effluent?**

The Salinas River Lagoon, Salinas River Estuary, and the Tembladero Slough are not effluent dominated water bodies. In addition, other factors, other than water quality, preclude these water bodies from supporting a viable shellfish population for consumption.

### **Factors precluding attainment of the beneficial use.**

The physical conditions, particularly flow and substrate, of the Salinas River Lagoon, Salinas River Estuary, and Tembladero Slough preclude attainment of significant shellfisheries, as well as shell fishing activities.

Salinity in Tembladero Slough is dominated by fresh water. There is periodic tidal influence resulting in elevated salinity, reaching as high as 6.32 parts per thousand (seawater is generally 35 parts per thousand). Corbicula (Asian clam) is a freshwater clam that could potentially survive in the salinity environment of Tembladero Slough, but there is no information to suggest this clam is present.

Tembladero Slough is a deep channel slough with deep fine substrate. The channel depth (water depth) and substrate is not conducive to shellfish habitat. In addition, water depth and substrate (deep mud), is not conducive to shell fishing activity.

The Salinas River Estuary is blocked from direct connection to Moss Landing Harbor via tide gates. Consequently, salinity can fluctuate dramatically. Many clam species are sensitive to salinity and temperature changes, particularly during larval stages.

The Salinas River Estuary is a deep channel with fine substrate. Water depth and mud substrate are not conducive to clam survival, nor are they conducive to shell fishing activities.

## CEQA s Scoping Meeting and Public Workshop for the Salinas River Fecal Coliform and Tributaries TMDL

The Salinas River Lagoon is dominated by freshwater inputs. Habitat in the Salinas River Lagoon would be most conducive for fresh water clams, e.g. *Corbicula* (Asian clam). However, there is no information to suggest that the Asian clam is present.

The Salinas River Lagoon is a deep channel with fine substrate. The water depth and mud substrate is not conducive to shell fishing activities.

### **Is restoration a feasible option to support the shell fishing beneficial use?**

Staff proposes that restoration is not a feasible option as an effort to support the shell fishing beneficial use.

To support the shell fishing beneficial use in the Salinas River Lagoon, Salinas River Estuary, and Tembladero Slough, significant hydrologic and terrestrial changes would need to be made to create suitable habitat and fishing grounds. Additionally, literature from the early twentieth century indicates that shellfish species commonly consumed by humans may not have been prevalent in these waterbodies. Therefore, it is unlikely that restoration efforts, even if attempted, would result in a viable shellfish population.

### **STAFF RECOMMENDATION**

Staff is recommending that the shellfish beneficial use (SHELL), be removed as a beneficial use from the Salinas River Lagoon, Salinas River Estuary, and Tembladero Slough.

### **CONSIDERATIONS**

If the shell fishing beneficial use is removed from these water bodies, the applicable numeric target for the TMDL will be those described in the “Proposed Numeric Target” section, page 11.

If the shell fishing beneficial use is not removed from these water bodies, it is likely that the applicable numeric target for the TMDL will be stricter than those proposed in the “Proposed Numeric Target” section on page 11; the more strict targets protecting the shell fishing beneficial use are described in the “Data and Information” section of this Appendix on page iv.